Ethics of Task Shifting: Exploring the Role of Community Health Workers in HIV Care in Tanzania

HSCI 897: Capstone Paper

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List of Abbreviations

ART	Antiretroviral Therapy
AIDS	Acquired Immune Deficiency Syndrome
CHW	Community Health Worker
HIV	Human Immunodeficiency Virus
MCH	Maternal Child Health
MDG	Millennium Development Goal
NGO	Non-Governmental Organization
PMTCT	Prevention of Mother-to-Child Transmission
RCT	Randomized Control Trial
WHO	World Health Organization

Abstract

In high HIV prevalence settings, the delivery of HIV prevention, treatment and care services has created an enormous strain on health systems currently struggling to cope with critical shortages of health personnel. In attempts to address this dilemma, task shifting has taken place across sub-Saharan Africa to improve access to testing and treatment, decrease service costs, improve outreach, and ultimately combat the spread of HIV. Within this, task shifting can take many forms. For example, nurses can provide treatments that were previously the responsibility of medical doctors; likewise, lay counsellors can offer voluntary HIV testing, which nurses and practitioners formerly conducted. Within the provision of HIV care delivery, Community Health Workers (CHWs) have played a critical role, as they are individuals who receive basic training to conduct specific services that overburdened staff would otherwise struggle to carry out. However, widespread usage of CHWs within HIV care has not been immune to ethical challenges. For instance, CHWs have often been expected to carry out emotionally- and physically-demanding tasks with inadequate training, supervision and even compensation. Moreover, CHWs have been poorly integrated into formal health systems, which has not only impacted the quality of their work, but has further perpetuated power asymmetries between them and other health worker cadres. By using Tanzania as a case study, the objective of this paper is to examine ethical challenges and propose strategies to potentially resolve them, which emerge within HIV care delivery programs that involve CHWs. In this study, I evaluate these challenges through the lens of Ethical Principlism and more specifically, by focusing on the following ethical principles: respect, justice, beneficence, critical reflection, and confidentiality. As discussed, prioritizing these principles can help to ensure that CHWs receive fair and standardized forms of remuneration, are provided with adequate resources to conduct their work, and have increased power and decision-making within HIV programs. These outcomes can ultimately enable CHWs to help combat the spread of HIV through a means that does not exploit or take their critical role within service delivery for granted.

Keywords: HIV/AIDS; Community Health Workers; Ethics; Task-Shifting

Introduction

According to the World Health Organization (WHO), 57 countries are currently facing critical human resource shortages, over half of which are in sub-Saharan Africa.[1] This shortage is compounded by difficult working conditions, an exodus of trained health workers, and a high burden of disease.[2,3] In response to these challenges, many countries with fragile health systems have undertaken unique measures to respond to persistent health issues. As most notably reflected in the HIV epidemic, large-scale task shifting has taken place across sub-Saharan Africa in which particular HIV prevention, treatment and care responsibilities have been delineated from higher to lower trained cadres.[4,5] A resurgence in the usage of Community Health Workers (CHWs) has accordingly been seen across the continent.[5,6,7] This has been fundamental in scaling up access to HIV prevention information, testing services, antiretroviral therapy (ART), and counseling services.[8,9] In this regard, HIV has not only altered the burden of disease in sub-Saharan Africa, but it has dramatically shifted the way that health care is being structured and delivered.[5]

Roles of Community Health Workers (CHWs)

After receiving basic training in disease prevention, treatment and care, CHWs can undertake various responsibilities from mobilizing immunization programs,[10] to promoting healthy behaviour,[6] to being specialized communicators for illnesses like HIV.[3,4] Within the context of HIV, CHWs have acted as essential intermediaries between community members and the formal health care delivery sector.[5] By offering a range of services from HIV testing to counseling to referrals,[5,9] CHWs have increased community knowledge about the virus and how it is transmitted, which has contributed to mitigating stigma surrounding HIV.[11] Moreover, by

having strong ties to communities, CHWs have been vital in enhancing cultural appropriateness of interventions, as they have enabled HIV services to be delivered in more suitable, context-specific manners.[7] As many scholars have also noted, efficient scale-up of ARTs would simply not be feasible if CHWs were not quickly trained within health systems, as their deployment is incredibly cost-effective.[5,8] CHWs therefore represent an integral part of HIV service delivery, as they can dramatically improve access and coverage to essential health care services.[7,9]

However, widespread usage of CHWs also comes with a set of ethical challenges.[8] These challenges are foremost grounded in concerns over justice and fairness regarding the benefits and burdens they may encounter from their work. For example, concerns over exploitation emerge, as CHWs risk being exposed to unfair employment practices including inadequate training and unfair compensation.[12] For example, not only have many CHWs been expected to conduct their work on an entirely voluntary basis, but some CHWs have had their responsibilities poorly explained to them, which has in turn caused CHWs to take over roles otherwise belonging to paid and highly trained staff.[12] Such issues can ultimately perpetuate power imbalances between CHWs and other health care cadres,[13] which can eventually lead to CHW disempowerment and poorer quality services being provided to patients.[7] Furthermore, CHWs have been seriously undervalued within service provision, as they have been poorly integrated into formal health systems.[4,5,11,14] This not only exacerbates fragmentation in health care delivery,[5,13,15] but it causes social injustice within human resources, as CHWs often lack the opportunity to contribute to important decision-making processes.[13] As their engagement within health systems becomes more commonplace, questions arise regarding their long-term position in health systems[5] and more broadly, whether they can mitigate HIV through a means

that does not take their essential role for granted. Ethical guidance therefore needs to become the cornerstone of CHW deployment. Prioritizing this approach can ultimately aid institutions and stakeholders with navigating the complex challenges that may arise from utilizing CHWs[13] in HIV care delivery.

Currently, however, much of the literature focuses on the efficacy and applicability of utilizing CHWs to respond to particular health issues[15,16] or the health system challenges that are alleviated by task shifting.[3,5,30] Little research has focused on the harms or ethical and practical implications[12] that may ensue when it comes to utilizing CHWs.[15] Research therefore risks being one-sided, as the metrics used to showcase CHW effectiveness may not be comprehensive. This paper seeks to shed light on this critical knowledge gap by examining ethical challenges regarding the usage and integration of CHWs within health systems. By using Tanzania as a case study, this paper describes the role and traditions of CHWs within HIV care along with ethical issues associated with their deployment. To better understand how these challenges have come into fruition, this paper first overviews the historical emergence of CHWs. This is followed by a brief discussion of contextual challenges within Tanzania's health system and the gaps that CHWs are currently trying to fill. A set of ethical principles is then introduced, which, if abided to, can help to ensure that CHWs are being utilized in a respectful, non-exploitative, and meaningful manner. A case study is then used to showcase results that can emerge from prioritizing the ethical principles of engaging CHWs in HIV care, followed by conclusions and policy recommendations.

Methods

For this research paper, I searched the peer-reviewed literature using MEDLINE, PubMed, Cochrane Database of Systematic Reviews, and Google Scholar databases. Key terms used to conduct the literature search were: "Community Health Workers," "HIV," "Ethics," "Tanzania," and "Lay Health Workers." It should be noted that several terms are used in the literature to describe CHWs. Some of these include home-based carers,[5,11,16,34] peer support workers,[5,12,16] treatment supporters,[4] village health workers,[4,10,15] lay counsellors,[11] birth attendants,[4,15] and lay health advisors.[7] For this paper, the central term used to conduct the literature search was CHWs, as since 2004, it has been widely referred to as being an overarching concept for lay workers who receive basic training and are employed within the health sector.[11]

Inclusion and exclusion criteria for this research paper were as follows:

Table I: Exclusion and Inclusion Criteria

Inclusion Criteria	**Exclusion Criteria**
Published in year 2000 or later	Not available online
Original studies, systematic reviews, or grey literature	Not written in English
Discussed CHWs and/or their usage in HIV/AIDS care	Did not discuss CHWs and/or their role in HIV/AIDS care
Discussed ethical principlism	Did not discuss ethical challenges emerging in the delivery of HIV/AIDS services

Articles were accessed through the SFU and UBC electronic libraries. In addition to the electronic scholarly searches, reference lists of the identified studies were also examined. This paper sought to produce high quality evidence by analyzing systematic reviews and

randomized-control trials (RCTs). However, many studies, particularly RCTs, are often ill-equipped to address ethical challenges that can emerge within the provision of HIV/AIDS services.[7] Review articles and grey literature was therefore also examined, which covered topics included in the aforementioned inclusion and exclusion criteria. Critical appraisal of the research evidence can be found in the Appendix section of this paper.

As showcased in the literature, several ethical challenges emerge from utilizing CHWs to help combat the spread of HIV/AIDS. These issues are multifaceted and often interconnected. To better understand these complex challenges, data were analyzed using ethical principles. As Holland argues,[28] principlism can be employed as a strategy to better understand and dissect ethical issues and the contributing factors that may lie behind them. Through this identification, strategies can be proposed to eventually resolve them. The five ethical principles that will be expanded on in this paper, which have particular relevance to CHW and HIV programming, include respect, justice, beneficence, critical reflection and confidentiality. These principles were selected as they cover the range of ethical challenges highlighted in the literature. Moreover, they were chosen over alternative ethical principles (namely additional principles mentioned in Stones' analysis[13] of CHW programs in the United States), as they describe central ethical challenges, which many alternative principles also aim to address.

Summary of Findings

Historical Overview of CHWs

By definition, CHWs are individuals selected by community members who receive basic training to conduct one or more health care functions within their communities.[12,17] In order to understand the role of CHWs within Tanzania's health system, along with ethical challenges

that may accompany their work, one must first examine how their usage came into fruition. As Schneider et al. argue,[11] widespread utilization of CHWs is not a new phenomenon. As envisaged by the Alma Ata declaration, CHWs represented a pragmatic way of enhancing community involvement within the provision of health services.[10] By specifically improving access to affordable health services, CHWs were viewed as a cornerstone of primary health care in the 1970s and 1980s.[4,5,6,10,11,15,31] However, by the early 1990s, enthusiasm for CHWs began to diminish.[6,11,15] Many were being deployed with inadequate planning, training, management, and unreliable funding.[4,5,6,11] Challenges with scale-up were therefore becoming more apparent[6] as concerns arose over the long-term role of CHWs within health systems.[11,15] These constraints were ultimately hindering the quality of care being delivered, as high attrition rates were becoming commonplace in many CHW programs.[4] Within Tanzania, key challenges began to emerge, which were largely caused by poor communication occurring between CHWs and other health provider cadres.[10] A debate began to surface over whether CHWs could indeed become mediators of community health behaviour change or rather represented limited functionaries within health sectors.[11]

However, by the mid-1990s, a resurgence of CHW programs was observed. This was sparked by several factors, most notably, the rapid spread of the HIV/AIDS epidemic[4,6,11,15] and growing interest in health care decentralization.[15] More specifically, the HIV crisis in Tanzania caused many health workers to experience increased workloads, as they were expected to test people for HIV, place HIV-positive individuals in a continuum of treatment services, and then by the mid-2000's, roll-out ARTs while simultaneously tending to other duties.[18] These cumulative factors began exacerbating rates of worker absenteeism within Tanzania's health systems,[18]

which was compounded by other factors such as health workers emigrating to foreign countries in search of better work opportunities[2,3,7] or being forced to leave work after becoming infected with HIV themselves.[18] CHWs represented a cost-effective way of remedying these complex issues and were therefore increasingly employed across the country. More recently, CHWs have been utilized to address critical human resource shortages caused by emigration of health workers from low- to high-income countries.[2,15] Growing demands for CHW programs have also reflected recent efforts to achieve the Millennium Development Goals (MDGs).[2,4,6,11,12,15,18] Despite this renewed interest, old challenges still persist regarding CHWs and their employment. Some of these challenges include poor supervision, lack of appropriate incentives, high attrition rates, and poor integration within formal health systems.[11] These persistent challenges mainly arise from CHW programs being introduced in hurried and top-down manners.[11]

As this historical overview showcases, task shifting is not a new innovation, as it emerged decades ago.[2,4,11,19] However, renewed interest in CHW programs has been "more pragmatic than ideological."[11] This is because CHWs have been largely perceived as being a means to curbing health system challenges like the HIV crisis[11] rather than a strategy to providing employment to lower educated citizens and increasing community engagement in the health care decision-making that affects their lives. Furthermore, within the provision of HIV services, task-shifting has filled gaps that have emerged from health systems becoming increasingly verticalized and privatized.[4,6,20] These factors have ultimately undermined the ability and responsibility for governments to respond to persistent health system challenges.[5,20] CHWs have been used as a means to filling this void. In this regard, distinct political and

philosophical underpinnings lie behind the promotion of CHWs, which may ultimately explain why their central role within health systems has gone largely unnoticed.[6,11] As more stakeholders become increasingly involved in responding to the HIV crisis, it is imperative that individuals and institutions recognize the complex, heterogeneous practices of CHW programs[3,5,16] to best ensure their essential role within health systems is not being exploited nor overlooked.

Tanzanian Context

With a population of over 51 million people, Tanzania is considered to be one of the world's least developed countries; its GDP currently stands at $48.06 billion[21] with only 7.3% of this figure being invested in health expenditures.[22] Poor health financing is compounded in Tanzania by an enormous shortage of health workers. The country previously had the lowest physician-population ratio in the world.[18,19] There are only 3.1 physicians and 43.6 nurses and midwives for every 100,000 people in Tanzania.[23] This is minuscule in comparison to Canada, which has a ratio of 206.8 physicians per 100,000 people. [23] Of the few health workers that are available in Tanzania, they are unevenly distributed, as the majority of health personnel are in urban centres;[19] however, approximately 69% of people reside in rural areas.[36] Task shifting has thus been utilized "as an ad hoc coping mechanism" to address serious health worker shortages[19] and health system challenges that exist in Tanzania.

Tanzania's HIV prevalence is 5.0% amongst people aged 15 to 49; this has reflected a steady decline from 6.6% in 2005.[24] Although this reduction showcases progress, gaps still exist in HIV service delivery; in fact, 39% of people living with HIV and medically eligible for HIV treatment do not have access to consistent ART coverage.[24] CHWs have been viewed as a vital

way of addressing this gap in Tanzania. After being selected by local health committees and health boards,[10] CHWs offer a range of essential services including voluntary HIV counseling and testing, observing ART ingestion, and referring postnatal mothers to infant care.[16] These assignments have ultimately promoted health behavior changes, reduced stigma, and provided adherence support to people living with HIV and their families.[2]

However, task shifting has largely taken place informally in Tanzania, as little evidence has recorded what tasks have been delineated from one cadre to another.[6,19] This poor recordkeeping has caused many CHWs to often perform duties outside of their portfolio and skillset.[19] Moreover, as Mubyazi et al.[10] discovered in the Mkuranga District of Tanzania, low recognition of the function of CHWs in Tanzania's health system has been observed amongst villagers and district officers. In response to these issues, in 2010, the WHO published several conditions for the successful scale up of task shifting, which specifically included:

1) Task shifting must be utilized to improve overall quality of care while not being associated with second-rate services;

2) Task shifting must be implemented through a means that protects health workers and patients by establishing regulatory mechanisms, proper certification, and remuneration of health workers; and

3) Regulation and certification must not decelerate the pace that action is already occurring nor restrict future public health delivery.[19]

Although these recommendations represent a first step in addressing poor management of CHWs, they are indeed guidelines; thus, proper enforcement appears to be an ongoing challenge in Tanzania. Within contexts where proliferation of new cadres has occurred rather

rapidly, close consideration needs to be given to ethical challenges that persist within their work. One tangible way of achieving this is by employing a series ethical principles, which will be expanded on in the following section.

Principlism

As the findings presented thus far highlight, various factors impact the effectiveness and limitations of utilizing CHWs to combat the spread of HIV in Tanzania. While CHWs represent a cost-effective strategy for promoting community outreach,[17] which has been fundamental in ART scale up,[9] implementation concerns still persist. Some of these concerns include maintaining high standards of safety and quality care,[2,4,6,8,9,11,14,19,25] reducing CHW attrition,[2,25] standardizing training and supervision,[2,6,9,12,16,19,20,26] aligning CHWs with broad health system strengthening,[8,9,11,12,14,19,25] and ensuring that CHWs receive fair compensation for their work.[2,5,6,8,9,11,12,16,19,20,25,26] These challenges cut across several CHW programs and are fraught with ethical aspects. In order to better understand these recurring issues, while also ascertaining ways to mitigate them, this section will examine a series of ethical principles.

Principlism is a normative ethical framework, which is used to navigate practical decision making that takes place within the delivery of health care services.[29] As Coughlin highlights,[27] principles play a prominent role in moral reasoning and can help to reveal ethical underpinnings that may form the backdrop to many health problems. By specifically referring to a set of principles, an individual can more clearly elucidate a health dilemma and identify strategies to potentially resolve it.[28] In this sense, making principlist observations within health

care can aid key stakeholders with pragmatically navigating ethical challenges that might emerge within research- and practice-based settings.[29]

Although originally developed within bioethics to help navigate individual cases where patient rights and autonomies were being breached, principlism can also be applied in public health.[27,28,29] Unlike medicine, which is more individualistic in nature, public health is foremost concerned with promoting the health of populations by balancing the needs and desires of individuals, communities and governments.[28] Common principles that have been used to negotiate public health interactions include justice, transparency, trustworthiness, and respect.[13,28] In this regard, principlism provides a coherent analysis of the various ethical issues that undergird efforts to strengthening health outcomes for vulnerable populations, while also identifying potential ways to circumvent them.[28] This method of analysis is particularly useful for the purposes of this paper, as currently, there appears to be no consensus on a structured way of addressing the aforementioned ethical challenges that emerge within CHW programs in Tanzania.

What ethical principles should then be applied to guide HIV service delivery within CHW programs in Tanzania? As Stone showcases in his analysis of CHW interventions in the United States,[13] nine principles offer a pragmatic means of navigating ethical issues that may emerge within their work. These specifically include:

- Equal and substantial respect
- Justice
- Care
- Beneficence
- Community
- Cultural humility and openness
- Critical reflection

- Critical trustworthiness
- Competency

Since Stone's analysis[13] was derived from results within a different setting, these principles will be adapted to the context of Tanzania's health system. For the sake of brevity, this paper will explore five key principles some of which include the aforementioned principles of respect, justice, beneficence, and critical reflection. These principles were chosen over the others as they concisely reflect the range of ethical challenges that have been highlighted in the literature that is covered in this capstone paper. Other principles, and the elements covered by them, are largely discussed by these four selected principles. For example, under Stones' care principle, it is argued that CHWs should exemplify character traits of caring individuals such as empathy, supportiveness and helpfulness.[13] However, this principles folds into central points covered by the respect principle, including the need to treat individuals in a respectful and courteous manner. Moreover, like the competency principle, the care principle primarily reflects individual-centred qualities of CHWs, which have more significance in bioethics than the public health ethics context that this paper examines. Meanwhile, the community, critical trustworthiness, and cultural humility principles have many overlaps with the respect and justice principles; more specifically, they seek to ensure CHW programs build community-efficacy, trust, and capacity building among groups that are historically and systemically overlooked in health care programs.[13] In addition to these principles, one new principle will be applied, which has particular relevance to addressing ethical challenges that emerge within the provision of HIV services: confidentiality.

Table II: Ethical Principles impacting the Usage of CHWs within HIV/AIDS Care
Respect
Justice
Beneficence
Critical Reflection
Confidentiality

Respect

Underlying the respect principle is the notion that all individuals have equal "moral worth simply by virtue of their humanity."[13] This principle implies that stakeholders involved in HIV programs must recognize and value the important role that CHWs have in HIV programs; their contributions need to be respected, as their humanity warrants sufficient reason for them to be treated in such a way.[13] Simply put, CHWs hold an important piece of the puzzle when it comes to combatting HIV, as their inputs are an essential part of service delivery. CHW tasks with conducting HIV tests or rolling out ARTs must therefore be respected and valued within the provision of HIV programs.

Treating CHWs with respect requires that a certain outlook is prioritized, which has close ties to the Formula of Humanity. As the well-known philosopher Immanuel Kant once argued, since humans are rational agents, we cannot treat individuals merely as a means to achieve a particular outcome.[39] This formula can be directly applied and prioritized within HIV programs. More specifically, CHWs cannot be viewed or used simply as a means to filling gaps existing in service delivery.[13] For instance, researchers cannot utilize CHWs simply as a way to obtain data[7] to ensure their projects continue to receive funding. Likewise, institutions or health personnel should not merely hire CHWs for the sake of mitigating gaps that skilled personnel are currently

unable to fill[12] in Tanzania. Treating CHWs in such a way overlooks the value, knowledge and skillset they bring into HIV care and delivery. They rather need to be respected and viewed as bringing important contributions to HIV programs.

This is a pertinent issue in many programs today. Several CHWs in Tanzania have reported feeling overburdened due to their workload being simply too much to manage.[12,19,20] This issue breaches the respect principle, as it overlooks the limitations of CHWs while placing unfair burdens on them to conduct a range of services with inadequate training, remuneration or consideration of their external commitments. These issues represent tangible ways of respect not being prioritized in HIV programs, which occur frequently in HIV care delivery.[19] To expand, many CHWs have reported not receiving any monetary compensation for their contributions.[13] Moreover, as Mubyazi et al. additionally indicates,[10] numerous district level officers in the Mkuranga District of Tanzania do not recognize the existence of CHWs within their districts. These cumulative issues highlight the undervaluing and exploitation of CHWs within HIV programs; their contributions are often going unnoticed and underappreciated, as they are often being used simply as a means of addressing gaps in care delivery. Institutions, researchers and stakeholders must therefore begin prioritizing the need to respect CHWs based on the premise that they deserve it simply by virtue of their humanity.[13] This can better ensure that the essential role of CHWs within HIV service delivery is not being taken for granted.

CHW programs need to begin fairly remunerating CHWs for their work.[2,5,6,8,9,11,12,16,19,20,25,26] This sends a strong message to CHWs that their contributions are important and valued. Additionally, CHWs need to be provided with the resources to adequately conduct their work. For example, consent is a key part of upholding respect in HIV

programs, as it respects a person's right to information by treating individuals as if they are fully capable of making the right decisions once provided with information.[13] CHWs therefore need to be properly educated on the importance of informed consent and provided with opportunities to clarify questions they may have within training programs. These efforts can allow CHWs to feel better equipped in eventually providing informed consent in a non-biased and non-judgmental manner. Additionally, workloads provided to CHWs must be feasible given the resource shortcomings that may surround them.[20] CHWs should be consulted with during the planning stages of public health interventions to ensure they can feasibly conduct their tasks. Lastly, within transnational research endeavours, ample opportunities need to be provided to allow institutions to discuss potential cross-cultural tensions.[13] This can better enable HIV programs to be delivered through a more respectful and context-specific manner. These various efforts, which reflect desires to promote respect within CHW programs, can improve motivation, reduce attrition, and ultimately improve the quality of care being provided by CHWs within HIV programs.

Justice

Justice is a principle shaped by the concept of respect but further adds to it.[13] Rather than simply treating all individuals with respect, it seeks to address power imbalances that might undergird those interactions. More specifically, justice entails providing stakeholders who may have less power and authority with an avenue "to fight against that oppression."[13] In this regard, it can have important procedural implications, as it seeks to ensure that stakeholders who have historically had less power in influencing health care decision-making to be given an avenue to take part in those important procedural activities.[13] Likewise, it can have

distributive impacts, as it can seek to ensure that the benefits and burdens of programs are distributed equitably and fairly across all groups involved.[13,32]

Historically, CHWs have not had the ability to pull the lever that impacts agenda setting within HIV programs. This highlights breaches in procedural justice, as institutional arrangements have perpetually silenced them from influencing program decision-making.[13] Their roles have often been delineated to them in very top-down manners, as CHWs have regularly been told what to do with little opportunity to provide feedback.[11] Not only does this disrespect and overlook the potential contributions that CHWs bring within HIV services, but it creates a tiered system in which CHWs are relegated to the bottom of the decision-making totem pole. This issue can ultimately impact motivation and retention rates, as levels of dissatisfaction can arise due to CHWs feeling belittled, as if they have little influence or significance within HIV programs.

According to the justice principle, close attention must also be paid to ensuring that benefits and burdens arising in HIV programs be distributed fairly.[13] This notion, otherwise known as distributive justice, connotes that CHWs be assigned tasks with ample consideration of the resources needed to conduct them and the limitations that CHWs might have in carrying them out. This can ultimately ensure that CHWs do not undergo unfair burdens when partaking in HIV service delivery. However, this principle has not always been prioritized in Tanzania. For example, roles have often been delineated to CHWs rather informally,[6,19] which has caused many CHWs to undertake duties beyond their formal portfolio and skillset.[19] This provides an example of distributive justice being breached, as HIV programs are not being designed in ways

that provide CHWs with the knowledge, resources and tools necessary to perform their duties in a way that justly balances benefits against potential burdens.

Social justice must also be closely considered in HIV programs that involve CHWs. This entails "treating people equally who are equal in all morally relevant ways."[13] In other words, discriminating against individuals merely based on social class, ethnicity, race or gender must be closely examined and addressed.[13] Not only does this connote that HIV programs should not discriminate against particular group of individuals, but it can also imply that institutional mechanisms be set in place, which give higher priority to groups that have been historically marginalized based on these characteristics.[13] For instance, due to gender inequities that socially exist in Tanzania, women often lack access to the same opportunities for employment that men do. HIV programs can strive to mitigate this gender gap by giving high priority to women or other social groups that have been systemically disenfranchised. This example therefore represents one way of promoting social justice in HIV programs, as it strives to provide fair treatment and opportunity to all groups of individuals.

Lastly, issues of justice are compounded in Tanzania due to CHWs being placed outside of the formal health system. Instead of their role being integrated and formally recognized by the government, CHWs have carried out tasks with little supervision or support from the public sector.[5,11] This has marginalized CHWs and has further fragmented the delivery of HIV care.[5] According to the principle of justice, CHWs should be fully incorporated into primary health care provision; this can better ensure they have long-term opportunities for growth[5] and job promotions, thereby enhancing the power and authority they may possess within HIV and health care delivery.

In order to begin tackling these issues, infrastructure needs to improve in Tanzania to allow the role of CHWs to become aligned with broad health system strengthening.[8,9,11,12,14,19,25] This formal integration can enable CHWs to receive new opportunities for negotiating health care terms[5] and influencing CHW programs[13,25] and policy-making decisions. Within this restructuring, standardized forms of incentives and remuneration strategies must be prioritized. [13] Currently, CHWs can receive a range of types of remuneration; some CHWs are expected to volunteer while gaining compensation in the form of social "prestige" and gaining satisfaction in helping members of their community.[7] Other CHWs are remunerated by receiving food packages, being given assistance with their farm work, or provided with modest monetary stipends.[37] Ensuring CHWs receive standardized, fair salaries demonstrates justice, as it enhances the capacity for CHWs to carry out their tasks.[13]

Additionally, when designing interventions, stakeholders need to ensure that CHWs are provided with adequate resources to properly conduct their work. For example, if CHWs have to travel long distances to carry out home-based counseling services, resources such as bicycles should be provided, which needs to be prioritized within program budget setting. CHWs must be closely consulted and collaborated with throughout the planning and implementation stages of projects to best ensure that these needs are being addressed. Justice also requires that training and supervisory support be firmly established, which ensures that CHWs can indeed provide HIV care with adequate preparation.[19] Lastly, programs need to begin recognizing the important contributions that CHWs can bring into decision-making processes. Because they have been historically marginalized and left out of these processes, stakeholders need to make extra efforts to ensure that CHWs are being incorporated into decision-making procedures. All

of these aforementioned efforts can eventually improve the capacity and self-efficacy of CHWs, as they allow for CHWs to be provided with more power and authority within HIV programs.[13]

Beneficence

According to the principle of beneficence, health and human welfare benefits should be maximized within the provision of health care services.[13,29] Beneficence is often described in combination with non-maleficence, which aims to promote actions that mitigate harms or suffering of others.[40] For the purpose of this paper, both concepts will be used under this principle. When the principle of beneficence first emerged within medicine, it was used to guide medical providers in treating their patients. By specifically emphasizing the need for health benefits to be augmented, medical practitioners sought to undertake treatments that maximized health and welfare gains and mitigated harms that might ensue.[13,29] This concept can be adapted to the context of public health. As previously mentioned, public health is chiefly concerned with promoting population health by balancing varied needs of individuals, communities and governments.[28] Thus, according to the principle of beneficence, public health interventions should be arranged in such a way that they maximize the well-being of communities and individuals without placing harms or unfair burdens on particular stakeholders or groups. The benefits that should be maximized not only include improvements in health but also advantages such as community empowerment and strengthened capacity building.[13]

This principle has particular relevance to the context of HIV care. Previously, CHW programs have been designed with little consideration of the potential welfare gains or harms that CHWs might encounter. For example, CHWs often carry out HIV testing and counseling to

connect people living with HIV to care and help mitigate ongoing transmission rates. The principle of beneficence implies that institutional arrangements be structured to enable the health and well-being of CHWs to not be simultaneously jeopardized.[13] Yet this has not always been the case. For example, CHWs have sometimes put their own health at risk when providing HIV services, such as conducting home-based HIV tests with inadequate protective equipment that are otherwise available in health facilities or suboptimal training. Measures should therefore be taken to circumvent these issues. For instance, governments and institutions should ensure that CHWs are provided with proper equipment, such as latex gloves, when conducting HIV testing. This can allow CHWs to maintain and promote their health, as they are not encountering undue harms for the sake of carrying out an HIV test.

Likewise, ample consideration must also be given to structural harms that CHWs may encounter from partaking in their work. For example, peer educators (who are a type of CHW that is living with HIV) risk being stigmatized from delivering HIV services.[38] HIV programs therefore need to make concerted efforts to ensure that arrangements are made to circumvents such harms from arising. For instance, CHWs should receive proper education, support and supervision throughout the continuum of HIV programs.[13] This can better ensure they have access to resources to address any emotional, mental, physical and structural harms they may encounter from participating in their work.

Policy measures should also be taken to promote beneficence within CHW programs. For example, policies should be designed to ensure that CHWs receive fair remuneration; this ultimately enables CHWs to not place their own financial security at risk,[11] as it allows them to focus on their tasks without forgoing other income-generating opportunities. According to

beneficence, these measures can better ensure that the health and well-being of all stakeholders, including CHWs, are being promoted rather than jeopardized within the provision of HIV care. However, there can be challenges within this process. For example, many CHW programs are carried out in collaboration between numerous stakeholders including non-governmental organizations (NGOs), universities, government officials, and community members. Especially in cases where cross-cultural issues may be at play (for instance, during a multi-national randomized control trial), different stakeholders may have unique opinions regarding what benefits ought to be maximized.[13] This is where the need for the principle of critical reflection emerges.

Critical Reflection

According to the principle of critical reflection, it is not enough to prioritize the aforementioned principles. Rather, a system needs to be firmly established, which provides ample opportunity for stakeholders to critically reflect on these efforts. Through this reflection, stakeholders can better determine whether these attempts are indeed enabling CHW programs to be conducted in a morally-sound way or if they need further revision.[13] For example, even in spite of former attempts, institutions often maintain inequitable power asymmetries, which frequently disadvantage CHWs and other lower-educated groups.[13] More specifically, previous efforts have been made in Tanzania to promote the respect principle by involving CHWs and other community members in health service assessment; however, CHWs have been simultaneously given inadequate allowances and have thus felt disempowered by not being able to afford transport in order to visit health centres to conduct these assessments.[10] It is

therefore imperative that ongoing efforts be made to allow for these imbalances and contradictions to be continually reviewed and tended to.

A tangible example of promoting critical reflection is allowing for weekly or bi-monthly meetings to take place within HIV programs. Although this is not uncommon, many CHWs have been spoken to in top-down manners within these engagements.[11] Open and reciprocal feedback therefore needs to be emphasized within these processes to ensure that the needs and concerns of CHWs are being taken seriously and critically reflected on. Furthermore, critical feedback is nearly impossible to maintain with poor supervision; currently, numerous CHW programs have inadequate supervisory control,[4] which not only impacts the quality of care provided but also inhibits opportunities for critical reflection to take place. Improved supervision is therefore essential in ensuring that this principle is prioritized within HIV services.

Confidentiality

Confidentiality builds off the respect principle and argues that people have the right for their personal information to be protected and kept private within relationships in health care.[35] This is a pertinent issue in HIV care due to stigma surrounding the virus. By maintaining patient confidentiality throughout the provision of health services, CHWs can establish trust with their clients while further protecting them from encountering undue social discrimination.[35]

Despite confidentiality being prioritized in HIV and CHW programs today, this ethical principle is frequently breached within HIV care.[12] For example, instances have been recorded where CHWs have left personal data of HIV patients on their desks or in their cars.[7] Confidentiality has also become a pertinent issue during home visits, as CHWs often provide

counselling sessions in areas in close proximity to other individuals.[7] Further challenges have emerged from CHWs providing services directly to family members and friends whom they know very well.[33] In this regard, despite efforts being made to safeguard confidentiality within HIV care, ethical challenges still persist.

Further concerns arise over confidentiality being upheld for the benefit of the CHWs themselves. Especially in contexts where CHWs are peers who are also living with HIV, their role may inadvertently cause them to encounter stigma from being forced to disclose their status and other personal information to their clients.[38] CHWs therefore need to be properly informed of the risks of becoming peer educators; moreover, they need to be trained on how to cope with mental and emotional challenges they may encounter from allowing their status to be more widely known within their communities.

As these various issues highlight, it is not enough to simply educate CHWs on the importance of maintaining confidentiality; they need to be provided with the capacity to uphold it within their work. In this regard, it may not be sufficient to merely emphasize the gravity of confidentiality breaches within orientation and training programs; rather, confidentiality needs to be continually discussed with CHWs throughout the continuum of care. Supervision plays a key role within this, as it provides a safe space for CHWs to discuss the challenges and trepidations they come across in their work. Ongoing efforts must therefore be made on the supervisor's front to create this safe atmosphere for CHWs to discuss their concerns over confidentiality.

Limitations

As discussed, principlism presents a promising and practical strategy to tackling ethical issues that can arise within public health contexts.[28] The five aforementioned principles offer a tangible way of navigating complex decision-making within HIV care in Tanzania. However, there are limitations to using principle-based approaches within public health. Principlism risks having a reductionist tendency,[27,29] as it reduces ethical issues to a concise list of principles; in doing so, principlism can ultimately cause the nuanced challenges that may undergird these issues to sometimes be oversimplified.[29] Moreover, although principles serve as a guideline, they cannot always be strictly applied, as there may be some cases where they are appropriate in addressing ethical challenges and other instances where they are not.[27] Additionally, principles can be subjective, as they leave considerable space for judgment regarding what ethical issues ought to be prioritized.[29] In this regard, principles may serve as a starting point to discussing and tackling public health ethical challenges;[27] however, they do not represent a single way of addressing the complex issues that emerge within HIV care.

Case Study

In order to better understand how these ethical principles can be applied within CHW programs in Tanzania, case studies can be explored. This paper will examine one investigation[34] that recently took place in Tanzania; it specifically sought to utilize CHWs as a strategy to prevent perinatal transmission of HIV by improving uptake of antenatal care and HIV testing services.

Study Design

A randomized control trial was conducted between January 2013 and April 2014 in the Kinondoni and Ilala districts of Tanzania's largest city, Dar es Salaam.[34] Within the investigation, CHWs were selected from a database covering health workers already existing within Dar es Salaam's public health system. In total, 213 CHWs were employed to carry out home visits to help identify pregnant women and refer them to antenatal care, HIV testing, and prevention of perinatal transmission services. In order to conduct these activities, CHWs received a five-day training course on project delivery in addition to a two- to three-day course on monitoring and evaluation. Within this training module, CHWs were provided with information and materials on maternal and child health, HIV counseling, communication skills, data collection, and monitoring and evaluation. In addition, one refresher training course was provided to the CHWs one year into the project.[34]

After the CHWs received training, they conducted home visits and provided education to pregnant women on maternal and child health matters such as perinatal transmission of HIV and breastfeeding. Each CHW was assigned a mean number of 12.5 women, whom they visited once every three months. CHWs referred pregnant women to ANC services while further counseling them on the need to undergo HIV testing and take part in early ANC visits. CHWs subsequently returned to households to determine whether pregnant women had indeed carried out ANC visits. For pregnant women who missed a scheduled visit, CHWs were asked to follow up with them and encourage them to seek care. Lastly, CHWs followed the women to evaluate their health and their child's health postnatally until the study was complete.[34] For conducting each of these activities, CHWs received $63US per month in remuneration (which was converted from

Tanzanian shillings to US dollars by using a conversion factor of 0.4 to showcase the purchasing power parity (PPP) dollar amount).

In regards to management, one CHW coordinator organized monthly meetings with CHWs to discuss any challenges they encountered while further identifying potential ways to resolve them. Supervision and a mentorship program was also established; within this, community outreach nurses provided a means of enhancing clarity and CHW understanding regarding their various undertakings. As the study results eventually indicated, the CHWs identified over 45,000 pregnant women through their home visits; over 75% of these pregnant women were yet to identify themselves to an ANC. Although this figure showcases the potential for CHWs to improve uptake rates of maternal and child health services, the CHWs failed to report eventual ANC uptake rates, as many CHWs did not conduct follow-up visits.[34] This finding may imply that CHWs were not provided with the resources and means necessary to conduct their assigned tasks, as project staff may have overlooked the practical and normative challenges described under the ethical principles discussed in this paper. Closer examination of these tensions can be found in the following tables.

Application of Ethical Principles

Several efforts were made within this intervention to ensure that the CHWs were incorporated into the study in an ethically-sound way according to the principles highlighted in this paper. These areas are identified in the following table.

Table III: Areas Executed Well	
Ethical Principle	**Application**
Respect	• Training and supervisory activities provided a means for CHWs to share their insights and clarify misunderstandings throughout project undertakings. These activities reflected efforts to respect the important role and contributions that CHWs bought into this intervention.
Justice	• Broad health system strengthening was supported, as CHWs were recruited only if they already existed and were employed in Tanzania's public sector. By prioritizing this integration, CHWs received better opportunities for long-term growth and employment within Tanzania's health system. • Efforts were made to compensated CHWs, as they were paid $63US per month.
Beneficence	• Home visits were carefully designed with the goal in mind of enhancing maternal and child health outcomes; efforts were made to train and supervise the CHWs to ensure they indeed had access to information and resources to properly conduct the home visits. This likely led to community empowerment and capacity building, as CHWs felt better equipped to help enhance maternal and child health outcomes within their communities.
Critical Reflection	• The mentorship program and supervision activities provided opportunities for CHWs to clarify questions and misunderstanding they had over various project activities. These undertakings likely influenced the high rates of retention, as of the 213 CHWs employed, only 19 dropped out over the 16-month study.
Confidentiality	• CHWs were educated on the importance of conducting home counseling sessions only if privacy could be ensured (i.e. if family members or friends could not overhear the conversations).

There are however areas for improvement within this investigation. Based on the limited data provided, my own analysis of these improvement areas are expanded on in the table below.

Table IV: Areas in Need of Improvement	
Ethical Principle	**Application**
Respect	• It was not mentioned whether CHWs were approached or consulted when designing this intervention. Prioritizing this communication and collaboration (starting from the program's planning stages) may have enabled the researchers to design a program where the CHWs could indeed conduct follow-up home visits, as CHWs may have been assigned workloads they could feasibly manage. • It was not mentioned whether CHWs were trained on the importance of obtaining informed consent during the field visits.
Justice	• Efforts were made to ensure that CHWs were educated and prepared to professionally conduct their tasks through the five- and two-day training courses. However, some have argued that CHWs need to receive up to three months of training prior to conducting their activities.[7] This better ensures they have access to adequate resources. Thus, the CHWs likely could have received more training, as there is only so much information they can absorb in a two- or five-day training module. • Little effort was made to mitigate power asymmetries that may have existed between CHWs and other health personnel. For example, training appeared to be very top-down; nothing was mentioned over whether CHWs helped design the intervention before it was actually implemented or if they offered their insights or constructive criticisms to the outreach nurses during the study. • Although it was briefly mentioned in a table that mobile phones were disseminated, the authors did not expand on which stakeholders were provided with these phones (such as the community outreach nurses, CHWs, researchers, etc.). Nothing else expanded on the resources that were given to CHWs to better enable them to conduct the home-visits. It appeared that stakeholders assumed all CHWs could visit the ~12.5 women they were each assigned to. However, as previously mentioned, CHWs failed to conduct follow-up visits to determine eventual ANC uptake rates. In this regard, closer evaluation of whether CHWs needed additional resources such as bicycles or taxi allowances may have better enabled and empowered the CHWs to carry out the home- and follow-up visits.

Beneficence	• Efforts were made to hire public sector CHWs, which provided opportunities to improve their capacity in serving long-term in Tanzania's health system. Yet it was not discussed whether CHWs indeed received opportunities for direct employment following termination of this project. • Nothing was discussed regarding the potential risks and harms that CHWs encountered by taking part in these activities (such as forgoing other job opportunities in order to take part in the investigation).
Critical Reflection	• Although the mentorship program and supervision activities allowed CHWs to clarify any of their questions throughout the project, little emphasis was made to critically reflect whether project undertakings needed to be completely revised or changed. For example, did the CHWs feel completely disempowered during the intervention due to lack of resources provided to them to conduct the home visits? In this sense, supervision appeared to represent project management rather than critical reflection.
Confidentiality	• As stated, CHWs were educated on the importance of only providing counseling services if no one else could overhear conversations. However, nothing was mentioned regarding what CHWs would do if privacy could not be ensured during the home visits. Furthermore, accurately tracking this may have been difficult throughout the intervention given the large number of CHWs employed in the investigation. It may therefore be important to not take this statement simply at face-value; additional efforts could have been made by the research team to allow CHWs to offer counseling sessions in areas others than in people's homes.

Recommendations for Future Research and Practice

Previous evidence has shown that CHWs have significant potential in empowering communities by serving as essential intermediaries between individuals and the formal health system.[5,12] CHWs can be utilized to address systemic issues including health worker migration[2,3] and community outreach.[17] Although they have important purposes in HIV care, it is critical to emphasize that CHWs do not represent a panacea for weak health systems.[2,5,6,8,11,20] Several efforts should be made to best ensure that CHWs can effectively combat HIV without

disregarding the ethical challenges and limitations of their work.

Task shifting for HIV care needs to occur with careful planning and consideration of holistic and contextual factors that may be impacting HIV rates.[14] To do this, task-shifting must be aligned with broad health system strengthening.[19] For example, NGOs and other institutions must make concerted efforts to coordinate their programs with the local government and municipalities.[25] Like the previous case has exemplified, researchers and institutions can coordinate with the public sector by hiring CHWs who are already employed within Tanzania's health sector. This can allow for their work to be more formally integrated and responsive to specific health system challenges; moreover, it better ensures that CHWs experience improved capacity building and long-term growth within the provision of health services.

CHWs must be respected throughout their undertakings. Their contributions and concerns need to be valued and heard; furthermore, power imbalances that may lie between CHWs other primary health care workers must be mitigated. Ensuring that CHWs receive fair compensation can represent a strategy to achieving this,[2,5,6,8,9,11,12,16,19,20,25,26] as it shows that CHW contributions are a valued part of HIV service delivery. Improving working conditions is also essential.[11] CHWs must be provided with ongoing training and supervision to allow them to not become overburdened, isolated and encounter burn-out.[7,8] Furthermore, CHWs should have access to greater resources such as bicycles or other materials, which can decrease unnecessary barriers that may disproportionally hinder CHWs from carrying out their tasks. Additional efforts should be made to ensure that CHWs have improved opportunities to take part in decision-making processes; for example, CHWs should be engaged and consulted with throughout interventions starting from the planning stages.[13] Moreover, within workshop

training, CHWs should be able to provide input to help adapt education materials to respond to their specific needs.[7] This helps to ensure that CHWs encounter greater power and authority in decision-making processes; moreover, it allows for CHWs to be deployed through a means that is culturally acceptable and empowering for all stakeholders involved.

In regards to policy, the deployment of CHWs needs to become better aligned with social policy to begin improving the quality of services they can provide.[11,19] Ethnographic work can shed light on ways to engage CHWs into policy-making decisions that better address social and economic inequities.[31] Furthermore, steps need to be taken to ensure that CHW remuneration is more standardized across HIV programs; this can create clearer career pathways to ultimately provide CHWs with better opportunities for long-term employment.[11] Integrating CHWs more formally into Tanzania's health system may represent one way of achieving this. Lastly, given that their role is so essential in HIV service delivery, better coordination, political commitment, investment, and ownership needs to be provided on the government's behalf.[11,14] Continued policy inaction on this front is simply ethically untenable.[14]

Conclusions

HIV poses specific challenges within health systems struggling to address critical health worker shortages.[8] Although CHWs have played a tremendous role in decreasing the burden of HIV within Tanzania, they do not represent a sustainable solution to addressing the nuanced problems that occur within weak health systems.[5,6,8,19,20] As Philips et al. argue,[8] ART distribution is "far more complex than simply dispensing pills." In other words, CHWs have evolved over time to fill in gaps within ART scale up and HIV care.[11] However, task shifting

cannot be promoted in isolation[8,14] or serve as a short-term excuse to remedying challenges that health systems are otherwise struggling to address.[8] Task shifting for HIV care must rather be planned carefully and with close consideration of healthcare contexts.[14] Thus, stakeholders need to begin asking how CHWs can be used as effective agents for behavioral change *without* overstepping the boundaries and limitations of their work. Moreover, their work must be formally integrated into local health systems to promote improved opportunities for long-term growth and health systems change.[8,9,11,12,14,19,25] Failure to do this will only exploit and further marginalize CHWs within health systems[11] while further fragmenting the delivery of HIV services.[5]

As this paper has highlighted, several ethical challenges emerge within the deployment of CHWs in HIV care in Tanzania. Some of these include upholding the quality of care,[2,4,6,8,9,11,14,19,25] reducing attrition,[2,25] and ensuring that CHWs are fairly remunerated.[2,5,6,8,9,11,12,16,19,20,25,26] Principlism offers a pragmatic approach to assessing and identifying potential strategies to alleviate ethical challenges that can arise in health care.[27,29] This ethical framework can be applied in HIV care delivery to more clearly reveal the complexities that lie behind these issues while further identifying ways to resolve them.[28] Principles that have particular relevance within HIV care in Tanzania include respect, justice, beneficence, critical reflection and confidentiality. By failing to prioritize these principles and ensuring they are responded to and upheld within the provision of HIV services, ethical challenges that otherwise exploit and overburden CHWs are likely to ensue.

Overall, HIV care delivery, like other public health matters, poses challenges that can cause trade-offs to sometimes be made between individuals, communities and governments.[28]

As discussed, the deployment of CHWs within HIV care delivery represents one example where such challenges can be brought into fruition. Despite these issues, CHWs are clearly here for the future within HIV care in Tanzania.[13] It is therefore imperative that concerted efforts be made to address the ethical challenges that currently undergird their work.

Critical Reflection

My recent practicum placement served as the catalyst for this research. Between May and July 2016, I served as a research intern in Shinyanga, Tanzania. While there, I was immersed in an RCT, which aimed to utilize CHWs to mitigate perinatal transmission of HIV. While the CHWs were clearly improving community outreach to antenatal care services, I quickly noticed that attrition among the CHWs was becoming a prominent issue in the study. After having several discussions with the project manager, I discovered the CHWs were only being compensated $2.50 per month to conduct the HIV services they had been assigned to. Following this observation, I was keen to combine my passions for research in HIV and global health ethics for this paper by specifically analyzing ethical issues that can emerge in HIV programs involving CHWs.

I thoroughly enjoyed my time pursuing my MPH degree here at SFU. I have been exposed to numerous structural, ethical, social and economic determinants impacting health outcomes globally. Moving forward, I hope to keep learning more in these important areas of scholarship by pursuing a research career in global health ethics. Through my research, I hope to shed light on important, practical challenges that emerge in public health ventures, particularly when working with disenfranchised populations.

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Appendix

Table V: Critical Appraisal of Literature

Authors	Year	Journal Article	Type of Investigation	Methods
Terpstra et al.	2009	Health Promotion Practice	Qualitative study	Received funding from the National Institutes of Health (NIH) to conduct FGDs with 11 principal investigators and project managers who worked with CHWs to conduct health promotion research in Latino communities. These interviews were conducted to analyze ethical and practical challenges regarding the usage of CHWs within health research interventions.
Glenton et al.	2015	Cochrane Database of Systematic Reviews	Systematic review	Analyzed systematic reviews in conjunction with high quality syntheses of qualitative evidence to ultimately examine factors that impact the effectiveness of lay health workers with improving access to maternal and child health programs.
Haines et al.	2007	Lancet	Review article	Searched scholarly articles and grey literature to examine the potential contribution of CHWs on child health survival rates.
Philips et al.	2008	Lancet	Review article	Searched scholarly articles and grey literature to examine the role of CHWs on antiretroviral treatment in sub-Saharan Africa.
Schneider and Lehman	2010	AIDS Care	Review article	Through a mapping exercise conducted in 2008, a longitudinal study on lay health workers' experiences in the Free State Province, a case study analysis, and review of scholarly and grey literature, this paper analyses the role and contradictory orientations taken by lay health workers in South Africa's health system.

Schneider et al.	2008	Health Policy Plan	Longitudinal qualitative study	As part of a larger, longitudinal project to evaluate the implementation of ART roll-out in South Africa's Free State Province, the authors analyzed national and provincial policy documents, ministerial speeches, government commissioned audits and published literature on CHWs in South Africa. Then visited 16 primary health care facilities between April 2004 and July 2006 to eventually semi-structured group interviews with 231 CHWs and 182 nurses to ultimately examine integration of CHWs into South Africa's health system.
Angwenyi et al.	2013	Developing World Bioethics	Ethnographic qualitative study	Through observations of community engagement processes, and interviews with key stakeholders, the authors analyzed the role of CHWs in vaccine trials along with practical and ethical implications of this
Mubyazi et al.	2007	Ethno-Med	Qualitative study	Conducted group discussions and semi-structured interviews with household members, local primary healthcare committees, and district health managers to understand community knowledge, perceptions and trust of primary healthcare providers and CHWs with responding to community health needs.
Price and Binagwaho	2010	Developing World Bioethics	Review article	Reviewed scholarly literature on task shifting for AIDS treatment in Africa to determine whether unwarranted healthcare rationing is ethically tenable.
Chu	2009	PLoS Medicine	Review article	Described experiences of surgical task-shifting in sub-Saharan Africa by reviewing scholarly literature to highlight current challenges while outlining areas of improvement by showcasing lessons learned from task-shifting in the delivery of HIV care.
Stone et al.	2007	Family & Community Health	Review article	Reviewed scholarly literature to critically reflect and compile an ethical framework on the usage and training of community health workers.

Holland	2010	Book: Public Health Ethics and Practice	Book chapter	By reviewing philosophies within medical, public health and bioethics, discussed trade-offs in public health between individuals, communities and governments. Following this analysis, the authors described two strategies to navigate public health ethics including frameworks and principles.
Lewin et al.	2006	Cochrane Database of Systematic Reviews	Systematic review	Searched multiple scholarly databases and references lists for randomized control trials of lay health worker interventions. Data was then extracted to ultimately compile high-quality evidence determining the effects of lay health worker interventions with improving maternal and child health delivery in low- and middle-income countries.
Smith and Blumenthal	2012	Journal of Health Care Poor Underserved	Review article	Analyzed findings from a randomized control trial, a 10-year educational intervention, and scholarly literature to determine whether deployment of CHWs supported ethical principles of community-engaged research.
Munga et al.	2012	BMC International Health and Human Rights	Qualitative study	Conducted in-depth interviews with district- and national-level informants, which focused on either the informants' practical experiences of implementing task shifting in their respective district health facilities, or policy challenges regarding the management of health personnel.
Busza et al.	2012	Journal of International AIDS Society	Social ecological review	The authors identified barriers to PMTCT that originate outside the health system. This was used to construct a social ecological framework that categorized barriers to PMTCT at the individual, peer and family, community and sociocultural level. This framework then informed the literature search that sought to understand community-based approaches that have been used in PMTCT care and pertinent knowledge gaps that still remain in this area.
Munga and Maestad	2009	BioMed Central	Review article	Measured the inequalities of Tanzania's heath workforce by plotting Lorenz and concentration curves to illustrate uneven distribution by health cadres.

Hermann et al.	2009	BioMed Central	Review article	Analyzed scholarly literature of CHW programs in sub-Saharan Africa to compile an analytic framework highlighting 10 conditions for successful large-scale ART-related programs.
Zachariah et al.	2009	Royal Society of Tropical Medicine and Hygiene	Review article	Through an in-depth review of scholarly literature, examined opportunities and challenges of utilizing CHWs in HIV/AIDS treatment across sub-Saharan Africa.
McCoy et al.	2008	Lancet	Review article	Investigated pay structures of health workers across sub-Saharan Africa by examining public-sector survey data.
Daniels et al.	2014	Cochrane Database of Systematic Reviews	Systematic review	Analyzed randomized and non-randomized trials to review various incentives that have been utilized within lay health worker programs. Through this in-depth analysis, the authors were able to examine how incentive strategies are influencing retention and recruitment of lay health workers globally.
Berer et al.	2009	Reproductive Health Matters	Review article	Summarized scholarly literature of a journal issue to highlight key findings regarding the challenges of integrating mid-level health workers into health systems.
Lema et al.	2014	Journal of Acquired Immune Deficiency Syndrome	Randomized Control Trial	A quantitative evaluation took place over a 16-month period to evaluate an intervention where CHWs were employed to conduct home visits to ultimately improve uptake of antenatal care and PMTCT services.